

REMARKS

The Office Action dated April 4, 2005, has been received and carefully noted. The above amendments and the following remarks are submitted as a full and complete response thereto.

By this Amendment, claim 1 has been amended. No new matter has been added. Support for the amendments to claim 1 can be found in at least paragraphs [0030], [0031], and Fig. 2 of the specification as originally filed. Claims 1-8 are pending and respectfully submitted for consideration.

Claims 6 and 7 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. The Office Action took the position that claims 6 and 7 are unclear. In particular, the Office Action states that it appears from the specification that the grooves and the dimples are the same element. The Applicant submits that the grooves are in the dimples. The grooves are indicated by reference numeral 4, and the dimples are indicated by reference numeral 3. As recited in amended claim 1, the dimples are comprised of grooves formed on the sliding face. As shown in Fig. 2 of the present application, a plurality of grooves is formed into dimples. See also paragraph [0032] of the specification as originally filed.

In addition, the Applicant submits that claims 6 and 7 are definite and distinctly claim the subject matter that the Applicant regards as the invention. See also paragraph [0030] which states that "the single tier groove 4 are crossed by the second dam section 2A2 and a third dam section 2A3 of different diameters, which partition the grooves 4 into the first dimple section 3A, the second dimple section 3B and the third

dimple section 3C.” The Applicant also submits that individual dimples 3 are shown in the dimple sections 3A, 3B, and 3C.

Claims 1-8 were rejected under 35 U.S.C. § 102(b) as being anticipated by Pecht et al. (U.S. Patent No. 5,090,712, “Pecht”). Claims 2-8 depend from claim 1. The Applicant respectfully submits that claims 1-8 recite subject matter that is neither disclosed nor suggested by Pecht.

In the present invention, the sliding face comprises annularly arranged dam sections and annularly arranged dimple sections, each of which are located between the individual dam sections. Dimples are arranged in the individual dimple sections along the circumference and are inclined towards a rotary direction relative to a direction facing the fluid side. Therefore, the dimple sections of the present invention let the fluid flow over the sliding face, and the dam sections keep back the fluid, such that the fluid is reserved in the dimple sections. Also, the dimple sections exhibit a function of pushing back the fluid on the sliding face towards a fluid reservoir. Thus, frictional resistance of the sliding face is reduced, and the seal performance is improved, as well. In particular, in a low fluid pressure situation or during a low rotational speed commonly encountered by a general machine, a large number of dimples thus arranged, not only are able to achieve a significant reduction in frictional resistance, but also are able to improve a seal performance.

Furthermore, the sliding face is prevented from being damaged or worn out due to reinforcement provided by the dam section. Thus, durability of the sliding face is improved.

To the extent that the rejections remain applicable to the claims currently pending, the Applicant traverses the rejections and respectfully submits that Pecht fails to disclose or suggest all of the claimed features of the invention, and therefore, also fail to provide the critical and non-obvious advantages provided by the invention as discussed below.

Fig. 5 of Pecht illustrates a ring 76' having a sealed face pattern. The sealed face pattern provides a surface with microdams in substantially the same plane and which further have only grooved surfaces between the microdam surfaces. The spiral microdams 96 define polygonal surfaces such as a four-sided polygon 94, shaped substantially like diamonds, and three-sided polygons 98, shaped substantially like triangles. See column 5, lines 21-51 of Pecht. In the seal ring of Pecht, the sealed fluid easily leaks into inside. The sealed fluid between the sliding faces stay in the same radius if no external force effect on the fluid. The polygonal grooved surfaces in Pecht have spiral shapes to induce a pumping effect to make the outside fluid move inside. The fluid staying between the sliding faces in the same radius will flow into the inner polygonal grooved surfaces, because the microdams are made jagged and intersect with each other. Accordingly, the sealed fluid easily leaks inside.

With respect to claim 1, the Applicant submits that Pecht failed to disclose or suggest the claimed features of the invention. Claim 1, as amended, recites dimples being comprised of grooves formed on the sliding face. The Office Action took the position that the polygonal grooves surfaces 94 in Pecht were comparable to the dimples recited in claim 1. In contrast, Pecht merely discloses a plurality of polygonal grooved surfaces. See Fig. 5 and Fig. 6A of Pecht. However, the polygonal grooved

surfaces 94 of Pecht, are not comparable to the dimples recited in claim 1, because the polygonal surfaces 94 are not comprised of grooves formed on the sliding face.

In addition, claim 1 recites “a plurality of dam sections having annular forms and being disposed between said dimple sections. . . each of the dam sections have a predetermined inner and outer radii and is separated by one of dimple sections.” The seal ring 76' of Pecht, however, does not have dam sections having annular forms and being separated by one of dimple sections. Specifically, all of the microdams 96 in Pecht are connected.

Claim 1 further recites that adjoining dimples are arranged along the inclination direction between adjoining dimple sections and are separated by one of the annular face dam sections. In Pecht, the polygonal grooved surfaces 94 are arranged in a spiral form. However, the polygonal grooved surfaces are not separated by the microdams 96. Namely, the jagged microdam sections shown in Fig. 5 of Pecht intersect each other and are not separated by the dimple sections.

With respect to amended claim 1, the Applicant submits that Pecht also fails to disclose or suggest the claimed features of the invention. Claim 1, as amended, recites that each of the dimples has a long rectangular shape extending along an inclination direction thereof, and adjoining dimples arranged along the inclination direction between adjoining dimple sections are divided by one of the annular-shaped dam sections.

With respect to amended claim 1, the Applicant submits that Pecht also fails to disclose or suggest the claimed features of the invention. Claim 1, as amended, recites that each of the dimples has a long rectangular shape extending along an inclination

direction thereof, and adjoining dimples arranged along the inclination direction between adjoining dimple sections are divided by one of the annular-shaped dam sections.

In Fig. 5, Pecht discloses a ring 76' having polygonal grooved surfaces 94 on a sliding face. Each of the polygonal grooved surfaces 94 of Pecht has a diamond shape. However, as shown in Fig. 5, none of the polygonal grooved surfaces 94 has a long rectangular shape extending along the inclination direction thereof.

According to U.S. patent practice, a reference must teach every element of a claim in order to properly anticipate the claim under 35 U.S.C. §102. In addition, "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628,631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "Every element of the claimed invention must be arranged as in the claim. . . the identical invention, specifically, [t]he identical invention must be shown in as complete detail as contained in the claim." Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236 (Fed. Cir. 1989) (emphasis added).

The Applicant respectfully submits that Pecht does not disclose or suggest at least the combination of features of dimples being comprised of grooves formed on the sliding face; a plurality of dam sections having annular forms and being disposed between the dimple sections, a surface of the dam section being the same plane as the sliding face, wherein each of the dimples has a long rectangular shape extending along the inclination direction thereof, adjoining dimples arranged along the inclination direction between adjoining dimple sections are separated by one of the annular-shaped dam sections, and each of the dam sections having predetermined inner and

outer radii and being separated by one of dimple sections, as recited in claim 1. Accordingly, Pecht does not anticipate claim 1, nor is claim 1 obvious in view of Pecht. As such, the Applicant submits that claim 1 is allowable over the cited art.

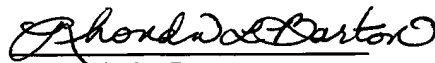
Claims 2-8 depend from allowable claim 1. The Applicant respectfully submits that these dependent claims are allowable at least because of their dependency from allowable base claim 1.

In view of the above, the Applicant submits that claims 1-8 recite subject matter that is allowable over the cited prior art. Accordingly, the Applicant respectfully requests withdrawal of the rejections, allowance of claims 1-8, and the prompt issuance of a Notice of Allowability.

Should the Examiner believe anything further is desirable in order to place this application in better condition for allowance, the Examiner is requested to contact the undersigned at the telephone number listed below.

In the event this paper is not considered to be timely filed, the Applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension, together with any additional fees that may be due with respect to this paper, may be charged to counsel's Deposit Account Number 01-2300, **referencing Attorney Docket Number 108179-00032.**

Respectfully submitted,



Rhonda L. Barton
Attorney for Applicant
Registration Number 47,271

Customer No. 004372
ARENT FOX PLLC
1050 Connecticut Avenue, NW
Suite 400
Washington, DC 20036-5339
Telephone: 202-857-6000
Fax: 202-638-4810

RLB: vmh